

REMARKS

Claims 1-24 are pending in the application. Claims 1-4, 6, 7 and 12-14 have been amended. New Claims 15-24 have been added. Support for the amendments and new claims can be found throughout the specification, and in particular on pages 3-6, 8-10, 18-27, and in the original claims. No new subject matter has been added by these amendments. Applicants respectfully request reconsideration of the present application in view of the following remarks.

Rejection of Claim 13 under 35 USC § 112, first paragraph

The Examiner rejected Claim 13 under 35 U.S.C. §112, first paragraph, as containing subject matter not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. The Examiner asserted that the phrase “and other conventional melt processing techniques” engendered new matter. Applicants have amended Claim 13 to remove this phrase, rendering this rejection moot. Therefore, Applicants respectfully request the withdrawal of this rejection.

Rejection of Claim 1-14 under 35 USC § 112, second paragraph

The Examiner rejected Claims 1-14 under 35 U.S.C. §112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Examiner asserted that the recited “one or more types of monomers” in Claims 1-4, 6, 7 and 12-14 constituted indefinite subject matter due to the term “types.” The Examiner also asserted that the recited “one or more vinyl monomers,” “one or more polar vinyl monomers” and “one or more hydroxyalkyl esters” in Claim 2, Claims 3, 4, 12, 13 and Claim 6, respectively, constituted indefinite subject matter since the recited “one or more” engendered superfluous subject matter. The Examiner also asserted that the recited “conventional melt processing techniques” in Claim 13 engendered an indeterminacy in scope. Applicants respectfully traverse this rejection for the following reasons.

Applicants have amended Claims 1-4, 6, 7 and 12-14 to remove the phrase “types of,” rendering the Examiner’s rejection moot. Applicants have also amended Claim 13, removing “conventional melt processing techniques” and thus rendering the Examiner’s rejection moot.

Applicants respectfully submit that the phrase “one or more” in Claims 2, 3, 4, 6, 12 and 13 does not add superfluous subject matter. This phrase is necessary to show that the monomers that comprise the graft copolymer of poly(ethylene oxide) may include one kind (or type) of monomer, or more than one kind (or type) of monomer. Applicants respectfully submit that the term “monomer” is known by those skilled in the art to refer to a particular type or kind of monomer or monomeric reagent. The term “monomer” is not used in a numerical sense to refer to only one monomeric unit on a polymer chain. Therefore, Applicants properly recited “one or more monomers” to denote that one, or more than one, monomeric reagent comprise the graft copolymer of poly(ethylene oxide). Applicants have defined the term “monomer(s),” in the reagent context, on page 10 of the specification. Therefore, for at least the above reasons, Applicants respectfully request the withdrawal of this rejection.

Rejection of Claims 1-14 under 35 USC § 103(a)

The Examiner rejected Claims 1-14 under 35 U.S.C. §103(a), as unpatentable over U.S. Patent 4,140,668 to Sumi *et al.* (hereinafter Sumi) or U.S. Patent 5,430,090 to Miyamoto *et al.* (hereinafter Miyamoto), in combination with U.S. Patent 3,891,584 to Ray-Chaudhuri *et al.* (hereinafter Ray-Chaudhuri).

The Examiner asserted that Sumi and Miyamoto disclose hot melt adhesive compositions, suitable for paper making, such as bookbinding, wherein said compositions are defined basically as containing a polyvinyl alcohol-governed melt mixture. The Examiner found that both the Sumi and the Miyamoto disclosures differ basically from the claimed invention in the non-express guidelines to incorporate, into the hot melt adhesive blend compositions, a graft copolymer of poly(ethylene oxide), as claimed in Applicants’ invention.

The Examiner submitted that Ray-Chaudhuri teaches hot melt adhesive compositions, useful in bookbinding, that are defined basically as containing a graft copolymer of a poly(ethylene oxide)-governed melt mixture. The Examiner concluded it would have been obvious to the skilled artisan to add the graft copolymer of poly(ethylene oxide) of Ray-Chaudhuri to the polyvinyl alcohol-governed melt mixture of Sumi or Miyamoto, with a reasonable expectation of obtaining a cumulative, additive effect. The Examiner stated that “[i]t is well established that no patentable invention resides in combining old ingredients of known properties.” The Examiner also stated that “[t]he combination of two compositions, each of

which is taught by the prior art to be useful for the same purpose, in order to form a third composition that is used for the very same purpose is prima facie obvious as authorized by *In re Kerkhoven* (205 U.S.P.Q. 1069, C.C.P.A. 1980).” Applicants respectfully traverse this rejection for the following reasons.

To establish a prima facie case of obviousness, the Examiner must establish that a prior art reference, or combined references, teach or suggest all the claim limitations of Applicants’ invention. MPEP §§ 2142-2143. Also, the teaching or suggestion to make the claimed combination, and the reasonable expectation of success, must be found in the prior art, and not based on Applicant’s disclosure. See MPEP § 2142; *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Applicants respectfully submit that neither the Sumi reference in combination with the Ray-Chaudhuri reference, nor the Miyamoto reference in combination with the Ray-Chaudhuri reference teach or suggest currently pending Claims 1-14.

Currently pending Claim 1 is directed to a method of making a composition comprising melting and blending a poly(vinyl alcohol) and a graft copolymer of poly(ethylene oxide), wherein the graft copolymer of poly(ethylene oxide) comprises a poly(ethylene oxide) backbone main chain, and one or more chains derived from one or more monomers that differ chemically or configurationally from the poly(ethylene oxide) backbone, and wherein the one or more chains are bonded at one or more points along the poly(ethylene oxide) backbone, and wherein the graft copolymer of poly(ethylene oxide) is prepared from poly(ethylene oxide) resins with number average molecular weights of about 100,000 g/mol to about 8,000,000 g/mol. Applicants respectfully submit that neither Ray-Chaudhuri, Sumi, Miyamoto, nor the combination of Ray-Chaudhuri with Sumi or Miyamoto, teach or suggest the method of currently pending Claim 1.

Ray-Chaudhuri in combination with the Sumi or the Miyamoto, does not teach or suggest graft copolymers of poly(ethylene oxide) prepared from poly(ethylene oxide) resins with number average molecular weights of about 100,000 g/mol to about 8,000,000 g/mol. Ray-Chaudhuri teaches polyalkylene oxide polymers with low molecular weights of about 3,000 to 20,000 (see Abstract). Neither Sumi nor Miyamoto teach or suggest graft copolymers of poly(ethylene oxide). Therefore Applicants respectfully submit that the Ray-Chaudhuri in combination with Sumi or Miyamoto, does not teach or suggest currently pending Claim 1. Since Claims 2-11 depend from Claim 1, Applicants respectfully submit that the Ray-Chaudhuri in combination with Sumi or Miyamoto, does not teach or suggest these claims.

Currently pending Claim 12 is directed to a method of making a composition comprising melting and blending a poly(vinyl alcohol), a poly(ethylene oxide), one or more polar vinyl monomers and an initiator, under sufficient heat and shear conditions to form a homogenous melt blend of poly(vinyl alcohol) and a graft copolymer of poly(ethylene oxide). Applicants respectfully submit that Ray-Chaudhuri in combination with Sumi or Miyamoto, does not teach or suggest currently pending Claim 12. Ray-Chaudhuri in combination with Sumi or Miyamoto, does not teach or suggest a method of melting and blending a poly(vinyl alcohol), a poly(ethylene oxide) in the presence of one or more polar vinyl monomers and an initiator. Therefore Applicants respectfully submit that the Ray-Chaudhuri in combination with Sumi or Miyamoto, does not teach or suggest currently pending Claim 12.

Currently pending Claim 13 is directed to a method of making a film comprising forming a melt blend of a poly(vinyl alcohol), a poly(ethylene oxide), one or more vinyl monomers and an initiator, under sufficient heat and shear conditions to form a homogenous melt blend of poly(vinyl alcohol) and a graft copolymer of poly(ethylene oxide), and extruding the melt blend to form a film. Ray-Chaudhuri in combination with Sumi or Miyamoto, does not teach or suggest a method of forming a film from a melt blend of a poly(vinyl alcohol), a poly(ethylene oxide) in the presence of one or more polar vinyl monomers and an initiator. Therefore Applicants respectfully submit that the Ray-Chaudhuri in combination with Sumi or Miyamoto, does not teach or suggest currently pending Claim 13.

Currently pending Claim 14 is directed to a method of making a film comprising extruding a poly(vinyl alcohol) and a graft copolymer of poly(ethylene oxide) in the shape of a film, wherein the graft copolymer of poly(ethylene oxide) comprises a poly(ethylene oxide) backbone main chain, and one or more chains derived from one or more monomers that differ chemically or configurationally from the poly(ethylene oxide) backbone, and wherein the one or more chains are bonded at one or more points along the poly(ethylene oxide) backbone, and wherein the graft copolymer of poly(ethylene oxide) is prepared from poly(ethylene oxide) resins with number average molecular weights of about 100,000 g/mol to about 8,000,000 g/mol. Ray-Chaudhuri in combination with Sumi or Miyamoto, does not teach or suggest a method of making a film by extruding a poly(vinyl alcohol) and a graft copolymer of poly(ethylene oxide), and wherein the graft copolymer of poly(ethylene oxide) is prepared from poly(ethylene oxide) resins with number average molecular weights of about 100,000 g/mol to about 8,000,000 g/mol.

Application No. 09/595,672
Response to Office Action

Therefore Applicants respectfully submit that the Ray-Chaudhuri in combination with the Sumi or the Miyamoto, does not teach or suggest currently pending Claim 14.

Therefore, for at least the reasons given above, Applicants respectfully submit that Claims 1-14 are allowable over the art of record. Therefore, Applicants respectfully request the withdrawal of this rejection.

Marked-up Version to Show Changes Made to Specification

Pursuant to 37 CFR §1.121(b), the following replacement paragraphs and sections show all the changes made by the foregoing amendment relative to the previous version of the specification, with deleted text shown in [brackets] and added text shown in underlining:

The paragraph beginning on page 9, line 18, and ending on page 10, line 3, was replaced with the following:

Modification of PEO resins with starting molecular weights of between about 100,000 g/mol to about 8,000,000 g/mol (number-average molecular weight) allows the modified PEO resins to be drawn into films with thicknesses of less than 0.5 mil. Modification of PEO resins with starting molecular weights of between about 300,000 g/mol to about 8,000,000 g/mol is preferred for filmmaking. Films thermally processed from the modified PEO compositions have better softness and greater clarity than films processed from unmodified low molecular weight PEO having a reported molecular weight of 200,000 g/mol or less. Thermal processing of films from high molecular weight PEO modified in accordance with this invention also results in films with improved mechanical properties over films similarly processed from unmodified low molecular weight PEO.

Marked up Version of Re-written Claims

Pursuant to 37 CFR §1.121(c)(1)(ii), another version of the rewritten claims marked up to show all the changes relative to the previous version of the claims is now set forth with deleted text shown in [brackets] and added text shown in underlining:

1. (Twice Amended) A method of making a composition comprising melting and blending a poly(vinyl alcohol) and a graft copolymer of poly(ethylene oxide),

wherein the graft copolymer of poly(ethylene oxide) comprises a poly(ethylene oxide) backbone main chain, and one or more chains derived from one or more [types of] monomers that differ chemically or configurationally from the poly(ethylene oxide) backbone, and wherein the one or more chains are bonded at one or more points along the poly(ethylene oxide) backbone, and

wherein the graft copolymer of poly(ethylene oxide) is prepared from poly(ethylene oxide) resins with number average molecular weights of about 100,000 g/mol to about 8,000,000 g/mol.

2. (Twice Amended) The method of Claim 1, wherein the one or more [types of] monomers comprise one or more vinyl monomers.

3. (Twice Amended) The method of Claim 1, wherein the one or more [types of] monomers comprise one or more polar vinyl monomers.

4. (Twice Amended) The method of Claim 1, wherein the one or more [types of] monomers comprise one or more polar vinyl monomers selected from the group consisting of 2-hydroxyethyl methacrylate, poly(ethylene glycol) methacrylates, poly(ethylene glycol) ethyl ether methacrylates, poly(ethylene glycol) acrylates, poly(ethylene glycol) ethyl ether acrylate, poly(ethylene glycol) methacrylates with terminal hydroxyl groups, acrylic acid, maleic anhydride, itaconic acid, sodium acrylate, 3-hydroxypropyl methacrylate, acrylamide, glycidyl methacrylate, 2-bromoethyl acrylate, carboxyethyl acrylate, methacrylic acid, 2-chloroacrylonitrile, 4-chlorophenyl acrylate, 2-cyanoethyl acrylate, glycidyl acrylate, 4-nitrophenyl acrylate, pentabromophenyl acrylate, poly(propylene glycol) methacrylate,

poly(propylene glycol) acrylate, 2-propene-1-sulfonic acid and its sodium salt, sulfo ethyl methacrylate, 3-sulfopropyl methacrylate, and 3-sulfopropyl acrylate.

6. (Twice Amended) The method of Claim 1, wherein the one or more [types of] monomers comprise one or more hydroxyalkyl esters of methacrylic acid.

7. (Twice Amended) The method of Claim 1, wherein the one or more [types of] monomers comprise 2-hydroxyethyl methacrylate.

12. (Twice Amended) A method of making a composition comprising melting and blending a poly(vinyl alcohol), a poly(ethylene oxide), one or more [types of] polar vinyl monomers and an initiator, under sufficient heat and shear conditions to form a homogenous melt blend of poly(vinyl alcohol) and a graft copolymer of poly(ethylene oxide).

13. (Twice Amended) A method of making a film comprising forming a melt blend of a poly(vinyl alcohol), a poly(ethylene oxide), one or more [types of] polar vinyl monomers and an initiator, under sufficient heat and shear conditions to form a homogenous melt blend of poly(vinyl alcohol) and a graft copolymer of poly(ethylene oxide); and

[forming the melt blend into a film using extrusion or other conventional melt processing techniques] extruding the melt blend to form a film.

14. (Twice Amended) A method of making a film comprising extruding poly(vinyl alcohol) and a graft copolymer of poly(ethylene oxide) in the shape of a film, [and]

wherein the graft copolymer of poly(ethylene oxide) comprises a poly(ethylene oxide) backbone main chain, and one or more chains derived from one or more [types of] monomers that differ chemically or configurationally from the poly(ethylene oxide) backbone, and wherein the one or more chains are bonded at one or more points along the poly(ethylene oxide) backbone, and wherein the graft copolymer of poly(ethylene oxide) is prepared from poly(ethylene oxide) resins with number average molecular weights of about 100,000 g/mol to about 8,000,000 g/mol.

New Claims 15-24 were added.

CONCLUSION

The foregoing is a complete response to the Office Action mailed November 14, 2002. Applicants respectfully submit that Claims 1-24 are in condition for allowance. Early and favorable consideration is solicited.

A check in the amount of \$492.00 is enclosed, the fee for five additional independent claims and four additional claims. No additional fees are believed due; however, the Commissioner is hereby authorized to charge any deficiencies which may be required, or credit any over payment, to Deposit Account No. 11-0855.

If the Examiner believes that there are other issues that can be resolved by a telephone interview, or that there are any informalities that remain in the application, which may be corrected by the Examiner's amendment, a telephone call to the undersigned attorney at (404) 815-6500 is respectfully solicited.

Respectfully submitted,



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